

Light Sources Directorate OHSAS Job Risk Assessment

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Name(s) of Risk Team Members: B. Chmiel, A. Lanzirrotti, C. Nelson, J. Aloj, L. Stiegler	Point Value → Parameter ↓	1	2	3	4	5
Job Title: General Cryogenic Work Job Number or Job Identifier: DL-JRA-0001	Frequency (B)	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
Job Description: General work with non-combustible cryogenic fluids and systems. Does not include liquid hydrogen or liquid oxygen.	Severity (C)	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
Training and Procedure List (Optional):	Likelihood (D)	Extremely Unlikely <<1x/20yrs	Unlikely 1x/10-20yrs	Possible >1x/10-20yrs	Probable 1x/yr	Multiple >1x/yr
Approved by: W. R. Casey Date: 2/6/08 A. Ackerman Date: 2/6/08 Rev. #: 1 Revision Log						
Stressors (if applicable, please list all): Moving dewars outdoors		Reason for Revision (if applicable):			Comments:	

		Before Controls							After Initial Controls						After Additional Controls					
Job Step / Task	Hazard	Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Initial Controls	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	Control(s) Added to Reduce Risk	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Moving storage vessel (dewar) to/from location	Overexertion injuries-excessive lifting, pushing, pulling, holding or carrying	N	1	3	3	3	27	Wheeled dewar design, Use of carts	1	3	3	2	18							
		Y	1	2	3	4	24		1	2	3	3	18							

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	Being struck by an object due to pressure release	N	1	3	4	2	24	Vessel design/certification, equipment inspection, deflector on relief valve	1	3	3	2	18							
Moving storage vessel (dewar) to/from location	Being struck by object (Dewar tipping over)	N	1	3	3	3	27	Design of dewar, attention to speed, threshold design	1	3	3	2	18							
Transferring liquid nitrogen to storage dewar at fill station.	Contact with temperature extremes (Frost bite)	N	1	4	2	4	32	Thick gloves (cryo, leather, welding, etc.), face shield, training. Proper clothing = cuff-less pants and sleeves and no sandals.	1	4	1	2	8							
	Oxygen deficiency	N	1	4	5	3	60	ODH alarms (including fill valve shutdown, auto door open and Control Room alarm response), postings, training	1	4	1	2	8							
	Being struck by an object due to pressure release	N	1	3	3	3	27	Training, eye protection, equipment inspection, vessel design/certification	1	3	3	2	18							
	Noise exposure	N	1	4	4	3	48	Noise surveys, postings, required PPE, training, increase distance from source	1	4	2	1	8							

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Connecting, transferring and disconnecting storage dewar to/from experimental equipment	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Thick gloves (cryo, leather, welding, etc.), eye protection, training; Proper clothing = cuff-less pants and sleeves and no sandals.	1	3	1	2	6							
	Being struck by an object due to pressure release	N	1	3	3	3	27	Training, eye protection, equipment inspection, vessel design/certification	1	3	3	2	18							
	Falls to lower level from ladder or other cryostat access	N	1	3	4	3	36	Ladder/platform design, equipment inspection, training, Tier I	1	3	4	2	24							
Hand transfer of cryogenic fluid to system	Contact with temperature extremes (Frost bite)	N	1	4	3	4	48	Heavy Gloves, eye protection, Proper clothing = cuff-less pants and sleeves and no sandals, training.	1	4	2	2	16							
	Falls to lower level from ladder or other cryostat access	N	1	3	4	3	36	Ladder/platform design, equipment inspection, training, Tier I	1	3	4	2	24							
	Cut by sharp object i.e. glass thermos dewars	N	1	3	2	3	18	Thick gloves (cryo, leather, welding, etc.), training	1	3	2	2	12							
Moving helium dewars using cranes,	Oxygen deficiency	N	1	1	5	3	15	Training (No personnel allowed to ride with dewar in elevator)	1	1	5	2	10							

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elevators, or other lifting devices	Overexertion injuries-excessive lifting, pushing, pulling, holding or carrying	N	1	1	3	3	9	Wheeled dewar design	1	1	2	3	6							
	Being struck by an object due to pressure release	N	1	1	3	3	9	Training, eye protection, equipment inspection, vessel design/certification	1	1	2	2	4							
	Being struck by object dropped during lift	N	1	1	4	3	12	Training, certification, hard hat, inspection of lifting devices	1	1	4	2	8							
Work in close proximity to cryogenic auto fill system	Oxygen deficiency	N	1	3	5	1	15	Training, ventilation, ODH calculations	1	3	5	1	15							
	Contact with temperature extremes Frost bite	N	1	3	2	3	18	Training, Blosa.	1	3	2	2	12							
Manipulating samples in liquid nitrogen bath Example: protein samples in plastic vials held on aluminum canes	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Training, safety glasses, gloves - inner cotton and outer rubber layers Do not immerse gloved fingers in cryogen; use tongs for this purpose	1	3	2	3	18							
Mounting and manipulating samples within	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Training, safety glasses	1	3	2	3	18							

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cryostream																				
Further Description of Controls Added to Reduce Risk:																				
*Risk:		0 to 20 Negligible		21 to 40 Acceptable			41 to 60 Moderate			61 to 80 Substantial			81 or greater Intolerable							